

APPENDIX B

RAPTOR MANAGEMENT AND MONITORING PLAN CAVE GULCH - BULLFROG - WALTMAN NATURAL GAS DEVELOPMENT PROJECT

APPENDIX B

RAPTOR MANAGEMENT AND MONITORING PLAN

Table of Contents

	Page
I.0 PURPOSE AND GOALS	B-1
2.0 METHODS	B-1
2.1 Avoidance and Minimization of Impacts on the Project Area	B-1
2.1.1 Instruction of Personnel	B-1
2.1.2 Power Line Crossarms	B-1
2.1.3. Seasonal Restrictions	B-1
2.1.4. Casual Use	B-2
2.1.5. Unusual Maintenance	B-3
2.2. Mitigation	B-3
2.2.1. Rationale and Overall Plan	B-3
2.2.2. Justification for ANS Use	B-4
2.3 Monitoring	B-8
2.4 Reporting	B-10
3.0 SCHEDULE	B-10
4.0 EVALUATION	B-11
5.0 LITERATURE CITED	B-12

Tables and Figures

Table B-1.	Locations of Artificial Nesting Structures	B-4
Figure B-1.	Locations of Artificial Nesting Structures	B-5

APPENDIX B

RAPTOR MANAGEMENT AND MONITORING PLAN Cave Gulch - Bullfrog - Waltman

1.0 PURPOSE AND GOALS

This raptor management and monitoring plan (RMMP) has been developed for application to the Cave Gulch - Bullfrog - Waltman gas/oil field development proposed by the Cave Gulch Operators. The purpose of this plan is: (1) to provide the means to enable managers to avoid and minimize impacts to raptors, (2) to mitigate impacts that do occur through measures designed to maintain the long-term breeding raptor population in the region at a level comparable to that which would have occurred in the absence of the field development, and (3) to document the effectiveness of the mitigation and monitoring plan.

2.0 METHODS

2.1 Avoidance and Minimization of Impacts on the Project Area

2.1.1 Instruction of Personnel

All project workers will be instructed about the nature of raptor species that occur on the project area, potential impacts to these species, and measures that can be taken to avoid or minimize impacts. They will also be advised of federal and state regulations and laws concerning harassment and illegal kill of raptor species.

2.1.2 Power Line Crossarms

If above-ground power lines are installed, power pole cross arms will be configured by the owner of the power line according to specifications described in *Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996* (Avian Power Line Interaction Committee) so as to eliminate the potential for raptor electrocution.

2.1.3. Seasonal Restrictions

Seasonal restrictions of construction activities within 1/4 mile of occupied raptor nests will be applied. An occupied nest is defined as one where eggs or young are being incubated or tended. Occupied nests will be protected during the nesting period until the young have safely fledged. Normally the exclusionary time window for nesting activities extends from February 1 through July 31 for golden eagles and from March 15 through July 31 for other species. The AO may modify these dates depending on the specific circumstances surrounding individual nests.

APPENDIX B

Seasonal restrictions will be applied as follows:

- Any activity initiated prior to February 1 may be completely finished. This means a well may be permitted (casual uses), drilled, completed, and hooked up without restrictions unless activities on the drill site cease for 3 weeks or longer between February 1 and June 1. In the event of such prolonged inactivity, a nest survey must be performed in the 1/4-mile radius surrounding the drill site to determine whether or not an occupied nest has been established during the period of inactivity. If an occupied nest is found, the operation must temporarily cease until the young have fledged.
- Any activity initiated between February 1 and June 1 will require a nest check by BLM or the Operator representatives approved by the BLM within 1/4 mile; if an occupied nest is present, activity would be restricted during the critical period.

2.1.4. Casual Use

Casual uses include, but are not limited to, ground activities such as: (1) preliminary scouting of routes or sites, (2) land surveying and staking, and (3) cultural and wildlife surveys. Because casual use is generally not treated as a managed or permitted activity, there is a potential for causing impacts to nesting raptors. Measures that can be taken to minimize or avoid potential impacts are outlined below:

- Casual use activities away from existing roads and facilities that are scheduled to occur between March 1 and mid-June should be coordinated with the BLM in order to obtain current information about raptor nests in the area.
- If an adult raptor is flushed from a nest, particularly when eggs or very young birds are present, it is extremely important to get away from the nest area immediately so that the adult may quickly return to the nest to incubate the eggs or to shelter the very young birds. During the first few weeks after hatching, raptor chicks are unable to thermoregulate their body temperature and must have an adult on the nest in order to stay warm. The danger to exposed eggs or young is greater when temperatures are cold (less than 60 degrees F) or hot (greater than 90 degrees F), and when it is raining or snowing. Winds in excess of 10 mph, combined with cold temperatures or precipitation, increase the potential for losses from exposure.
- Operators must immediately report to the BLM raptor nests that are discovered and must not approach them. Employees will be directed not to enter buffer zones, established by the BLM to reduce stress to raptor adults or young and to prevent nest abandonment.
- The discovery of injured or dead raptors or young raptors which have fallen from nests must be reported to the Wyoming Game and Fish Department Game Warden for the Casper area (234-5940 or 473-3400) or the Platte River Resource Area BLM office in Mills (261-7500). Under no circumstances should these birds be approached or handled.

APPENDIX B

Other general information and guidelines that are pertinent to the management of casual uses so as to minimize potential impacts to nesting raptors include:

- Routine operations and maintenance on existing roads and facilities would cause little or no impacts.
- Early nesting golden eagles may be on eggs as early as the first week of March while late nesting birds may not commence incubation until the last week of May.
- Initiation of incubation by ferruginous hawks may commence as early as the first week of April, and as late as the second week of June.
- Great horned owls nest earlier than golden eagles. Red-tailed hawks and prairie falcons nest within the same approximate time frame as ferruginous hawks.

2.1.5. Unusual Maintenance

There are few facilities now located within the buffer zones of nests that are likely to be occupied. As field development continues, it is likely that progressively fewer nests would become occupied near facilities. In the event that there is an occupied nest near a facility which requires maintenance during the nesting season, the following precaution is provided:

- If Unusual Maintenance is proposed within 1/4-mile of an occupied nest between March 1 and June 15, Operators must contact the PRRA Authorized Officer for prior approval of operations or maintenance which would be "unusual". "Unusual" means extensive or significant operations, such as workover operations or other operations which include loud noise or night-time activity. Emergency (safety) situations are not restricted. The seasonal restriction at any particular occupied nest would be about 60 days, which would protect the raptors from intense disturbance during the periods of egg-laying, incubation and the first two weeks of brooding.

Evaluation of specific requests for prior approval would be based upon the following criteria:

- dates of proposed maintenance activities
- extent of proposed maintenance activities (length of time, number of vehicles and people, noise, daytime vs "round-the-clock" operations)
- stage of nesting (egg-laying, incubating, brooding)
- distance and visual relationship between the nest and the proposed maintenance activities.

2.2. Mitigation

2.2.1. Rationale and Overall Plan

As described in the DEIS, in Section 4.7.3.1.4, from 3 to 7 pairs of nesting raptors are likely to be displaced from the project area during the intensive drilling and construction phase of the project.

APPENDIX B

In order to avoid the significant impact to raptors that might otherwise occur, the EIS recommended that 14 artificial nesting structures (ANSs) be erected on and proximal to the project area. The rationale for the choice of this procedure as the primary mitigation action is that any losses in raptor production on the project area would be offset or more than offset by the creation of nesting opportunities in areas where they did not previously exist or were very poor.

2.2.2. Justification for ANS Use

The use of ANSs was selected as the primary mitigation agent because of the widespread documentation and demonstrated success of this technique for increasing raptor production in plains areas (Call 1994, Call and Tigner 1991, Gaines 1985, Houston and Scott 1992, Olendorff 1993, Schmutz *et al.* 1984, Schmutz 1989, Smith and Murphy 1978, Stalmaster 1988, Steenhof *et al.* 1993, Wittenhagen 1992).

- Physical description - ANS design and installation will follow the plan developed by Dr. Mayo Call (Raptor Biologist) and described in (Call 1989). In general, a wooden nest platform will be mounted on top of a large diameter (6" to 8") pressure-treated wooden pole approximately 9 to 12 feet above ground. Structures intended for use by golden eagles would be mounted 12 feet above the ground and would follow the general specifications used by Howard Postovit (Raptor Biologist) in the Powder River Basin of Wyoming. Structures intended for use by ferruginous hawks would be mounted at 9 feet above the ground. Wire netting secured to the nest platform will act as an anchor for nesting materials used in constructing a nest.
- Nest materials will consist of sticks collected from decadent sagebrush plants.
- The locations of the 14 ANS sites selected are illustrated in Figure B-1 and the legal descriptions of these sites are set forth in Table B-1.

Table B-1. Locations of Artificial Nesting Structures	
Section 34, Twn 38N:Rng 85W Section 35, Twn 38N:Rng 85W Section 01, Twn 37N:Rng 85W Section 27, Twn 37N:Rng 85W Section 07, Twn 37N:Rng 84W Section 03, Twn 36N:Rng 84W Section 13, Twn 38N:Rng 83W	Section 22, Twn 38N:Rng 83W Section 35, Twn 38N:Rng 83W Section 02, Twn 36N:Rng 83W Section 12, Twn 36N:Rng 83W Section 14, Twn 36N:Rng 83W Section 15, Twn 36N:Rng 83W Section 24, Twn 36N:Rng 83W

APPENDIX B

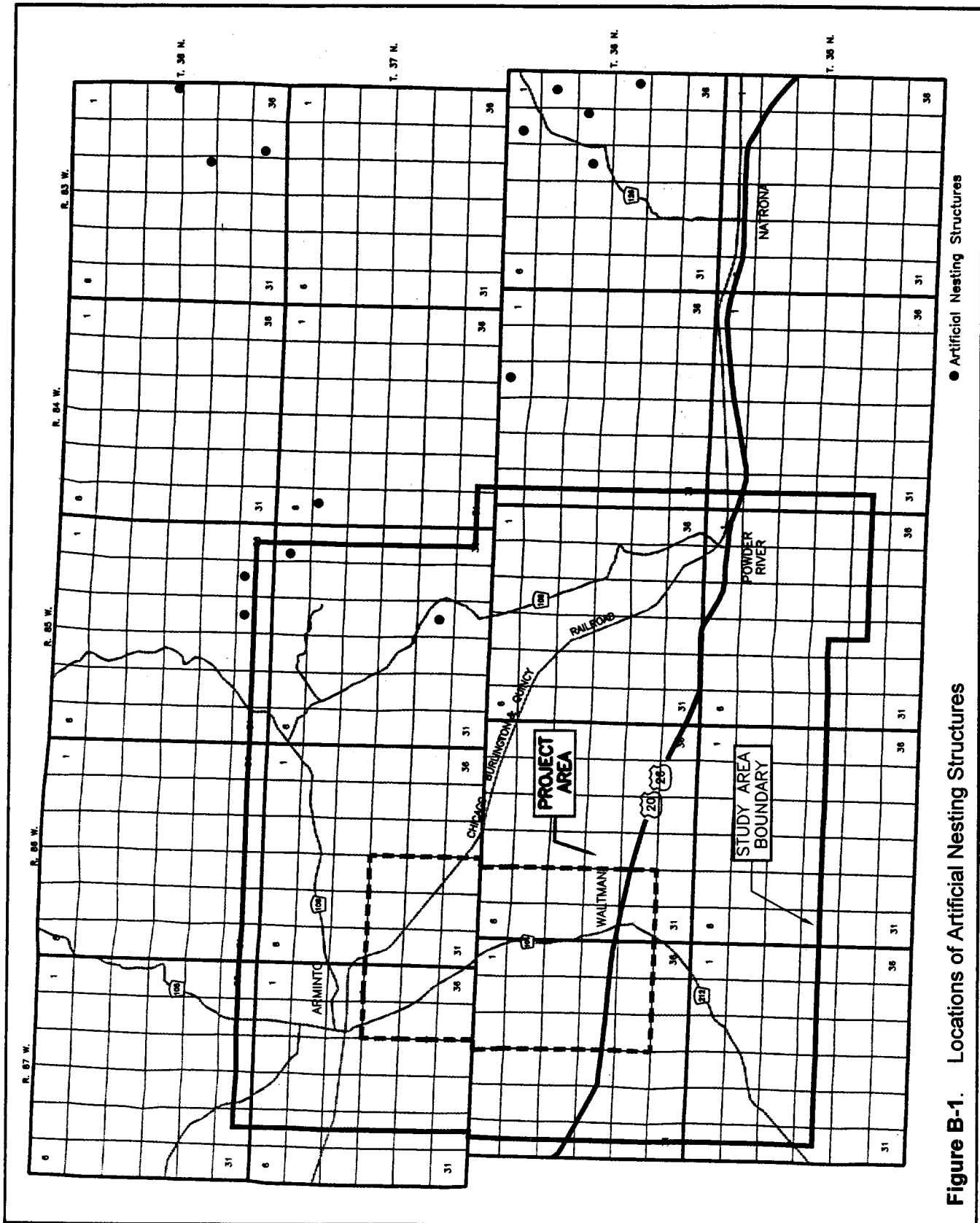


Figure B-1. Locations of Artificial Nesting Structures

APPENDIX B

In the selection of sites for ANS placement, opinions and suggestions from coordination/consultation with the U.S. Fish and Wildlife Service and the Wyoming Game and Fish Department were obtained and incorporated into the following list of criteria, sequence of steps, and processes. Site screening and selection was accomplished both in the office and in the field with the use of maps, data, and a helicopter survey. During the helicopter survey sites which had passed initial screening tests in the office were field inspected for other criteria. Sites which made the final cut were staked in the field and photographed from the helicopter.

- Areas of "low potential" for oil and gas development were selected based on analyses and mapping performed by BLM's Wyoming Reservoir Management Group.
- Sites within the areas classified as "low potential" for oil and gas development areas of currently unleased federal mineral and surface estate were selected.

Additional criteria applied to the areas which were screened out according to the two criteria listed above include:

- Twelve ANSs will be located in habitats more suitable to ferruginous hawks than to golden eagles or prairie falcons. Two ANSs will be located in habitats more suitable to golden eagles than to ferruginous hawks or prairie falcons.
- Raptor habitats lacking good natural nest substrates (rock pinnacles, cliffs, trees) will be selected in areas at least 1 mile from known active nests. Raptor habitats where only predator-accessible nests exist are likely to benefit from ANSs. Nests accessible to ground predators include nests located on: (1) the ground, (2) low pillar of rock (less than 6 feet high), (3) stream banks or erosion cuts accessible from either above or below, and (4) higher rock pillars that have an "access ramp" of natural rock leading up to it.
- Specific ANS sites will be selected in areas far removed (at least 1/2 mile) from existing physical facilities that require or undergo frequent visits or use. Such facilities include roads, corrals, oil and gas wells or facilities, mineral quarries, etc. Where possible, ANSs will be placed no closer than 200 feet from two-track trails and fences.
- ANS sites should be accessible to personnel who install and monitor them with access routes preferably not crossing private surface. When or if it is necessary to cross private surface the landowner will be notified.
- Avoid the most sparsely vegetated sites which are the least likely to support prey base for raptors.
- Space ANSs so that they are at least 1 mile apart.

APPENDIX B

Criterion applied as the result of consultation with the Wyoming Game and Fish Department:

- ANS sites should be outside of known sage grouse nesting habitats (2-mile radius from active leks) and prime brood rearing habitats (draws with riparian habitat).

Criterion applied at the request of the U.S. Fish and Wildlife Service:

- Place ANSs outside of areas with high densities of prairie dogs to avoid potential conflict with black footed ferret. This issue was addressed and resolved during the helicopter reconnaissance.
- ANSs will be installed between the end of the raptor nesting season (July 31) and November 15. If necessary, ANSs can be installed during the raptor nesting season (February 1 - July 31), provided that the activity will not impact other raptors nesting in the area. All 14 ANSs must be installed within 2 years of the signing of the Cave Gulch-Bullfrog-Waltman EIS Record of Decision (ROD).
- Permits
 - A permit from the Wyoming Game and Fish Department is required for the installation of ANSs and will be acquired by the BLM through the appropriate channels.
 - No U.S. Fish and Wildlife Service Permit is required for ANS installation as federal agencies are considered capable of carrying out such action within the appropriate laws (Migratory Bird Treaty Act and the Eagle Protection Act).
- Security of ANS Sites
 - It is the intent of this plan to maintain ANSs in a functional condition for 20 to 40 years or until such time as it can be determined that their maintenance is no longer required or useful.
 - If an ANS is not used for 5 years after placement, or if the site is compromised by an unavoidable disturbance, it will be relocated.
 - Management of the federal mineral and surface lands will be executed so as to avoid disturbances to raptors nesting on the ANSs. The development of site specific restrictions was based on: (1) 1/4 to 1/2-mile No Surface Occupancy (NSO) recommendations from the FWS (2) BLM's standard seasonal restrictions, and (3) information on the biological need and distances required for insulating nesting ferruginous hawks contained in the draft paper entitled *A Review of Literature Concerning the Use of Artificial Nesting Structures by Ferruginous Hawks and Other Raptors* (Baldwin and Hayden-Wing 1997). Restrictions are as follows:
 - A 1/4-mile NSO radius will be established around each ANS site.

APPENDIX B

- In addition to the 1/4-mile NSO radius, a seasonal raptor restriction buffer of up to an additional 1/4-mile will be applied, depending upon line-of-sight distances. If line-of-sight extends 1/2 mile or more from the ANS, the seasonal restriction would extend 1/2 mile beyond the 1/4-mile NSO buffer for a maximum total 1/2-mile buffer.
- The size of the seasonal raptor restriction radius will be determined by the AO for individual sites at the time proposals for development are received by the BLM.
- The AO can modify or adjust these restrictions accordingly when or if pertinent information that was previously unavailable, or that he/she was unaware of, becomes available.
- These restrictions were tailored for and are applicable to this specific project and do not represent a general policy applicable to other projects within the Platte River Resource Area or other BLM lands within the State of Wyoming.

The restrictions set forth above apply to surface uses including but not limited to: locatable minerals development, oil and gas activities, salable minerals activities, and realty actions. Typical grazing activities would not be of concern but range improvements, except for fences, would not be authorized within NSO zones. Permitted types of recreation use would not be allowed within the NSO zones.

- **Maintenance**

ANSs are designed to require very little maintenance. If an ANS becomes unusable, it will be repaired after July 31, but prior to February 1 of the following year. Adherence to seasonal restriction for nesting raptors would be needed for maintenance activities.

- Responsibilities for construction, installation, relocation, and maintenance of ANSs:
 - The BLM is responsible for mitigation to wildlife resources, when the need for mitigation has been documented through the environmental analysis process and decided upon in a decision document. The BLM may require Operators to provide or share in mitigation.
 - The Operators will be responsible for construction, installation, relocation, and maintenance of ANSs through the year 2000, as specified in a signed written agreement which is attached to this RMMP. After the year 2000, the BLM will assume responsibility for construction, installation, relocation, maintenance, and removal if appropriate, of ANSs.

2.3 Monitoring

Monitoring is used to evaluate the effectiveness of mitigation measures, which are intended to minimize the impacts of field development upon raptor nesting. Monitoring also determines the

APPENDIX B

extent to which development is occurring at the pace which was estimated and if the impacts are within the range which was predicted. If monitoring shows that mitigation is not effective, or needs to be changed, the mitigation may be adjusted.

Monitoring of the effectiveness of ANSs and of the population levels, as reflected by nesting densities and productivity of raptor species, are the two primary kinds of monitoring which will be conducted for the Cave Gulch-Bullfrog-Waltman project. The Greater Cave Gulch Raptor Analysis Area (GRAA) was originally the primary target area for placement of ANSs, but it was necessary to extend the area of consideration outside of the GRAA to the east in order to meet the criteria for site selection described in Section 2.2.2 of this appendix. The area in which ANS sites were selected is contiguous with the GRAA (See Figure B-1) and supports raptors of the same general regional populations as found on the GRAA. Monitoring population levels of raptor species will be done for the raptor mitigation area, which includes the GRAA, plus the ANSs outside the GRAA.

In addition to the raptor monitoring they conducted during 1994 through 1997, the Operators have agreed to be responsible for the following raptor monitoring tasks:

Project Area Plus the GRAA

1998

- Helicopter survey for occupied raptor nests in late May to mid-June.
- Survey raptor prey base (rodents) along previously established diurnal walking transects during mid July.
- Survey raptor prey base (rabbits) along previously established diurnal ground walking transects and nocturnal headlight transects during September.

ANS Sites

1997

- Construction and installation of 14 ANSs between August 4 and November 15.

1998, 1999, and 2000

- Helicopter survey to determine occupancy in late-May to mid June.
- Ground survey to determine to determine fledging/production status during early July.
- Establish and stake diurnal walking transects for the purpose of surveying raptor prey base (rodents) during mid-July.
- Establish and stake diurnal walking transects and nocturnal headlight routes for the purpose of surveying raptor prey base (rabbits) during September.

APPENDIX B

- * The methodology, sample sizes, sample locations used in these surveys are described in detail in the *Raptor Technical Report for the Cave Gulch Analysis Area - 1994, 1995, and 1996* (Hayden-Wing Associates 1997).

2.4 Reporting

An annual report on the results of all surveys (as described in Section 2.3 above) conducted during the year will be prepared by the Operators. Such reports will contain only the data collected and will present the results of surveys and monitoring without analysis. These reports will be submitted no later than December 1 each year, including the years 1997 through 2000. Copies of the report will be sent to: BLM Casper District, BLM Platte River Resource Area, Cave Gulch Operators, U.S. Fish and Wildlife Service (Cheyenne), Wyoming Game and Fish Department (Casper), and Wyoming Game and Fish Department (Lander).

3.0 SCHEDULE

1997

- August 4 - November 15 - Construct and install 14 ANSs
- September - Raptor prey base - rabbit surveys on the Project Area and the GRAA
- December 1 - Submit 1997 annual report for surveys on the Project Area and the results of installing ANSs east of the GRAA.

1998

- Late May - mid-June - Helicopter survey of occupied raptor nests on the Project Area, the GRAA, and the ANSs.
- Early July - Ground survey of ANSs to determine fledging/production.
- Mid July - Survey raptor prey base (rodents) along previously established transects on the Project Area/GRAA.
- Mid-July - Establish and stake diurnal walking transects and survey raptor prey base (rodents) in the ANS areas.
- September - Survey raptor prey base (rabbits) along previously established diurnal ground walking transects and nocturnal headlight transects on the Project Area/GRAA.
- September - Establish and stake diurnal walking transects and nocturnal headlight routes and survey raptor prey base (rabbits) in the ANS areas.
- December 1 - Submit 1998 annual report

APPENDIX B

1999 and 2000

- Late May - mid-June - Helicopter survey of occupied raptor nests on the ANSs.
- Early July - Ground survey of ANSs to determine fledging/production.
- Mid July - Survey raptor prey base (rodents) along previously established transects on the ANS areas.
- September - Survey raptor prey base (rabbits) along previously established diurnal ground walking transects and nocturnal headlight transects on the ANS areas.
- December 1 of 1999 and 2000, respectively, submit annual report.

4.0 EVALUATION

Following completion of surveys in the year 2000, the BLM in coordination with the FWS and the WGFD, will evaluate the effectiveness of the mitigation and determine what worked and what didn't work and why. This evaluation will be completed no later than June of 2001. Such long-term results are likely to be of value to all operators, managers, and biologists in making future decisions regarding the mitigation of raptor impacts.

APPENDIX B

5.0 LITERATURE CITED

- Call, M. W. 1989. Raptor monitoring in the Shamrock Hills: a 1989 monitoring study. Unpublished report. 110pp.
- Call, M. W. 1994. Raptor surveys and monitoring in the Shamrock Hills: a 1994 monitoring study. 88pp.
- Call, M. W. , and J. R. Tigner. 1991. Abstract: Artificial nest structures for ferruginous hawks in Wyoming. J. Raptor Res. 25:152.
- Gaines, R. C. 1985. Nest site selection, habitat utilization, and breeding biology of the ferruginous hawk in central North Dakota. M.S. thesis, N. D. St. Univ., Fargo. 32pp.
- Hayden-Wing Associates. 1997. Raptor Technical Report for the Cave Gulch Analysis Area - 1994, 1995, and 1996. Unpublished report. 33 pages plus maps and appendices.
- Houston, C. S. , and F. Scott. 1992. The effect of man-made platforms on osprey reproduction at Loon Lake, Saskatchewan. J. Raptor Res. 26:152-158.
- Olendorff, R. R. 1993. Status, biology, and management of ferruginous hawks: a review. Raptor Res. and Tech. Asst. Cen., U.S. Dept. Interior, Bur. Land Manage., Boise, ID. 84pp.
- Schmutz, J. K., R. W. Fyfe, D. A. Moore, and A. R. Smith. 1984. Artificial nests for ferruginous and Swainson's hawks. J. Wildl. Manage. 48:1009-1013.
- Schmutz, J. K. 1989. Management plan for the ferruginous hawk in Canada. Unpubl. Rept. Dept. Biology, Univ. Saskatchewan, Saskatoon. 43pp.
- Smith, D. G. , and J. R. Murphy. 1978. Biology of the ferruginous hawk in central Utah. Sociobiology 3:79-98.
- Stalmaster, M. V. 1988. Ferruginous hawk nesting mitigation study: final report. Unpublished report. ERO Corp, Denver, CO. 97pp.
- Steenhof, K., M. N. Kochert, and J. A. Roppe. 1993. Nesting by raptors and common ravens on electrical transmission line towers. J. Wildl. Manage. 57:271-281.
- Wittenhagen, K. W. 1992. 1992 final report on the ferruginous hawk in southeastern Montana. Unpublished report. U.S. Bur. Land Manage., Miles City, MT. 31pp.

